UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,683	02/08/2001	Michael Sharratt	P/62317	8237

7590 11/17/2005

Kirschstein, Ottinger, Israel & Schiffmiller, P.C.
489 Fifth Avenue
New York, NY 10017-6105

EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/780,683	SHARRATT ET AL.	
	Examiner	Art Unit	
	David S. Kim	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *43-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *43-45,47-58 and 60-68* is/are rejected.

7)☒ Claim(s) *46 and 59* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 August 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Applicant's compliance with the objections to the drawings in the previous Office Action (mailed on 10 March 2005) is noted and appreciated. The replacement drawing sheets were received on 09 August 2005. However, The drawings are still objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

- (claim 53 and 66) "each path is operative for bidirectionally guiding the respective radiation therealong, and wherein the interfacing means is operative for communicating said at least one component guided in ***either direction*** of the first path along ***either direction*** of the second path" (emphasis Examiner's).

This feature is still not shown in the figures. In particular, the bidirectional arrows in amended Fig. 1 (received on 09 August 2005) appear to imply that a path in Fig. 1 (i.e., rings 20, 30, 40, 50, or 60 in Fig. 1) corresponds to an "optical path" of the claims. However, the paths in Fig. 1 (i.e., rings 20, 30, 40, 50, and 60 in Fig. 1) actually comprise two parallel optical fiber loops (Applicant's specification, p. 11, 1st paragraph) so that these bidirectional paths in Fig. 1 do not read on the path limitations of the claims.

Additionally, the "at least one component guided" along each path is not guided in "***either direction***". Rather, each component appears to be guided in only ***one direction at a time***.

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. **Claims 45-47 and 58-60** are objected to because of the following informalities:

In these claims, the phrase "radiation; and liquid crystal attenuating means" is used where -- radiation and liquid crystal attenuating means -- may be intended. Otherwise, the semicolon implies that the liquid crystal attenuating means is not included as part of any means and that it is a standalone limitation.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 53 and 66** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In particular, notice the following limitation (claim 53 and 66):

"each path is operative for bidirectionally guiding the respective radiation therealong, and wherein the interfacing means is operative for communicating said at least one component guided in ***either direction*** of the first path along ***either direction*** of the second path" (emphasis Examiner's).

The "at least one component guided" along each path is not guided in "***either direction***". Rather, each component appears to be guided in only ***one direction at a time***. More exactly, "***either direction*** of the first path" appears to imply that the "at least one component" may be on loop 200 or on loop 210 in Fig. 2, which are two different paths. Neither the specification nor the drawings support this entire limitation. Accordingly, this limitation constitutes new matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 43, 48, 53-56, 61, and 66-68** are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (U.S. Patent No. 5,953,141, hereinafter "Liu").

Regarding independent claim 43, Liu discloses the first optical path (path from I1 in Fig. 8), the second optical path (path from I2 in Fig. 8), the switchable interfacing means (OADM 801), which includes the switchable waveband selective diverting means (the circulator in 807 together with some tunable reflection filters (TRFs) in the TSS module in 807), the switchable waveband selective coupling means (at least the bottom TRF in 807), and the switchable waveband selective attenuating means (the TSS module in 803).

Regarding dependent claims 48 and 53-55 under independent claim 43, Liu discloses:

(**claim 48**) optical domain operation (the corresponding means in Fig. 8 are optical devices),

(**claim 53**) bidirectional paths (Fig. 17A) and switching a signal on one path to either direction of another path (Fig. 17A),

(**claim 54**) each path including subpaths (any suitable choice of subpaths in Figs. 8, 16B, or 17A), and

(**claim 55**) bidirectional paths (Fig. 17A) and switching a signal on one path propagating in one direction to another path in an opposite direction (Fig. 17A).

Regarding claims 56, 61, and 66-68, claims 56, 61, 66, 67, and 68 are apparatus claims that introduce limitations that correspond to the limitations introduced by system claims 43, 48, 53, 54, and 55, respectively. Therefore, the recited means in system claims 43, 48, and 53-55 read on the corresponding means in apparatus claims 56, 61, and 66-68.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 45, 47, 58, and 60** are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to the claims above, and further in view of Amundson et al. (U.S. Patent No. 6,285,812 B1, hereinafter "Amundson").

Regarding claims 45, 47, 58, and 60, Liu does not expressly disclose the waveband selective filtering means and the liquid crystal attenuating means. However,

Rather, Liu broadly discloses the diverting means and the attenuating means comprising tunable fiber gratings 105 (col. 7, l. 10-13). However, tunable fiber gratings that employ liquid crystal material are known in the art, as shown by Amundson. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the tunable fiber grating teachings of Amundson in the teachings of Liu. One of ordinary skill in the art would have been motivated to do this since Amundson teaches further details on an exemplary tunable fiber grating. Such informative details are lacking in Liu. These details provide further instruction about an exemplary tunable fiber grating, instruction that would be necessary to one of ordinary skill in the art to operate and produce the tunable fiber grating.

10. **Claims 49-51 and 62-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to the claims above, and further in view of Bononi et al. ("Analysis of hot-potato optical networks with wavelength conversion", hereinafter "Bononi").

Regarding claims 49 and 62, Liu discloses all of the limitations except:

the first set and the second set having different wavebands.

However, waveband switching means that convert a first set of components/wavebands of into a second set of differing components/wavebands are extremely well known in the art. A common term for

such means is "wavelength converters." Bononi teaches the conversion of the wavelength of a signal into a different wavelength (Bononi, whole document). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement wavelength converters as part of the waveband switching means of Liu. One of ordinary skill in the art would have been motivated to do this for the conventional benefit of wavelength converters: to prevent wavelength blocking and contention (Bononi, p. 525, col. 2) in the second path of Liu.

Regarding claims 50 and 63, Liu in view of Bononi discloses the waveband selecting means (any suitable TRF in 807 in Fig. 8), the detecting means (Bononi, PD in Fig. 3), and the optical radiation source (Bononi, OTX in Fig. 3).

Regarding claim 51 and 64, Liu in view of Bononi discloses all of the limitations except:

said optical radiation source being biased substantially at its lasing threshold and stimulated by the isolated component, for generating a stimulated component modulated by information carried by the isolated component at a waveband different from the selected waveband for guidance along the second path.

However, Examiner takes Official Notice that this limitation is another common technique for providing wavelength conversion. Similar to the other means of Bononi, this limitation provides the same general benefit of the wavelength conversion means of Bononi. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement this limitation as part of the waveband selecting means of Liu in view of Bononi. One of ordinary skill in the art would have been motivated to do this for the conventional benefit of wavelength converters: to prevent wavelength blocking and contention (Bononi, p. 525, col. 2) in the second path of Liu.

11. **Claims 52 and 65** are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to the claims above, and further in view of Ramaswami et al. (*Optical Networks: A Practical Perspective*, hereinafter "Ramaswami").

Regarding claims 52 and 65, Liu does not expressly disclose the regenerating means. However, systems and apparatuses that include regenerating means for regenerating radiation guided therethrough are well known and common in the art. Ramaswami provides a description of standard

regeneration means (p. 10-11). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate regeneration means in the teachings of Liu. One of ordinary skill in the art would have been motivated to do this since there are transmission situations where an optical signal "may not be able to remain in optical form all the way to its destination and may have to be regenerated in between" (Ramaswami, p. 10, last paragraph). If the optical signals of Liu have sufficiently deteriorated, the information they carry may not be recognizable without such regeneration.

Allowable Subject Matter

12. **Claims 46 and 59** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

13. Applicant's arguments, filed on 09 August 2005, with respect to the independent claims have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments are based on the following newly introduced limitations to independent claims 43 and 56:

- switchable waveband selective coupling means for selecting and coupling at least one component from the first radiation diverted by the diverting means to the entry point.

Liu is applied to address these newly introduced limitations.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cheung is cited to show a related switchable interfacing means that includes switchable waveband selective diverting means, switchable waveband selective coupling means, and switchable waveband selective attenuating means (e.g., Fig. 3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600